

MATERIAL SAFETY DATA SHEET

1. SUBSTANCE AND SOURCE IDENTIFICATION

National Institute of Standards and Technology
Standard Reference Materials Program
100 Bureau Drive, Stop 2320
Gaithersburg, Maryland 20899-2320

SRM Number: 979
MSDS Number: 979
SRM Name: Chromium (Isotopic)

Date of Issue: 03 December 2004

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Description: Standard Reference Material (SRM) 979 is intended primarily for use as an assay and isotopic standard. Each unit of SRM 979 consists of 0.25 g of hydrated chromium nitrate $[\text{Cr}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}]$.

Substance: Chromium Nitrate, 9-Hydrate

Other Designations: **Chromium Nitrate, 9-Hydrate** (chromium nitrate nonahydrate; chromic nitrate; chromium trinitrate nonahydrate; nitric acid, chromium (3+) salt, nonahydrate; chromium (III) nitrate nonahydrate)

2. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

Component: Chromium Nitrate, 9-Hydrate

CAS Number: 7789-02-8

EC Number (EINECS): Not assigned.

**SRM Nominal
Concentration (mass %):** 100

EC Classification: Xi, O

EC Risk (R No.): 8, 36, 38, 43

EC Safety (S No.): 3, 24, 46

3. HAZARDS IDENTIFICATION

NFPA Ratings (Scale 0–4): Health = 2 Fire = 0 Reactivity = 1 Special Hazards = Oxy

Major Health Hazards: Skin disorders and allergies.

Target Organs: Immune system (sensitizer).

Potential Health Effects

Inhalation: Inhalation (acute exposure) of dust may cause irritation to the mucous membranes.

Skin Contact: Skin contact may cause irritation and upon re-exposure, an allergic reaction. Solutions may be slightly corrosive.

Eye Contact: Eye contact may cause irritation. Solutions may be corrosive. Repeated or prolonged exposure may cause conjunctivitis.

Ingestion: Ingestion may cause gastrointestinal irritation. Trivalent chromium compounds are poorly absorbed and generally do not cause systemic effects. If sufficient quantities are absorbed, hypoglycemia may occur.

**Listed as a Carcinogen/
Potential Carcinogen:**

Yes No

_____ X In the National Toxicology Program (NTP) Report on Carcinogens.
_____ X In the International Agency for Research on Cancer (IARC) Monographs.
_____ X By the Occupational Safety and Health Administration (OSHA).

4. FIRST AID MEASURES

Inhalation: If adverse effects occur, remove to uncontaminated area. Give artificial respiration, if not breathing, by qualified personnel. Get immediate medical attention.

Skin Contact: Rinse affected area with copious amounts of water for at least 15 minutes while removing contaminated clothing. Get medical attention, if needed.

Eye Contact: Immediately flush eyes, including under the eyelids, with copious amounts of water for at least 15 minutes. Get immediate medical attention.

Ingestion: Get immediate medical attention.

5. FIRE FIGHTING MEASURES

Fire and Explosion Hazards: Chromium nitrate, 9-hydrate is a negligible fire hazard. Chromium nitrate, 9-hydrate is an oxidizer and may ignite or explode on contact with combustible materials.

Extinguishing Media: Do **NOT** use dry chemicals, carbon dioxide, or halogenated extinguishing agents. Use water or extinguishing agents most appropriate for surrounding fire.

Fire Fighting: Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Wear full protective clothing and NIOSH-approved self-contained breathing apparatus (SCBA).

Flash Point (°C): Not applicable.

Method Used: Not applicable.

Autoignition Temp. (°C): Not applicable.

Flammability Limits in Air

UPPER (Volume %): Not applicable.

LOWER (Volume %): Not applicable.

6. ACCIDENTAL RELEASE MEASURES

Occupational Release: Avoid contact with combustible materials. Do **NOT** touch spilled material. Collect small spilled material in an appropriate container for disposal.

Disposal: Refer to Section 13, "Disposal Considerations".

7. HANDLING AND STORAGE

Storage: Store and handle in accordance with all current regulations and standards (NFPA 430, Code for the Storage of Liquid and Solid Oxidizers). Store in a tightly closed container. Keep separated from incompatible materials.

Safe Handling Precautions: See Section 8, "Exposure Controls and Personal Protection".

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits: Chromium Nitrate, 9-Hydrate

Chromium, Chromic, and Chromous Compounds (Cr)

ACGIH (TLV): 0.5 mg/m³ TWA

OSHA (PEL): 1 mg/m³ TWA (insoluble salts) (metal)

NIOSH: 0.5 mg/m³ (10 h) recommended TWA

OES UK: 0.5 mg/m³ TWA (chromium II and chromium III compounds)

Ventilation: Use adequate ventilation or a local exhaust ventilation system. Ensure compliance with applicable exposure limits.

Respirator:	If necessary, refer to the "NIOSH Guide to the Selection and Use of Particulate Respirators Certified under 42 CFR 84" for selection and use of respirators certified by NIOSH.
Eye Protection:	Wear safety goggles. Do NOT wear contact lenses in the laboratory. An eye wash station should be readily available near areas of use.
Personal Protection:	Wear appropriate protective clothing and chemically resistant gloves to prevent skin exposure.

9. PHYSICAL AND CHEMICAL PROPERTIES

Component:	Chromium Nitrate, 9-Hydrate
Appearance and Odor:	Solid. Purple. Odorless.
Relative Molecular Weight:	400.15 g/mol
Molecular Formula:	$\text{Cr}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$
Solvent Solubility:	Soluble in alcohol, acids, alkali, and acetone.
Water Solubility:	Soluble.
Melting Point:	60 °C

10. STABILITY AND REACTIVITY

Stability:	<u> X </u> Stable <u> </u> Unstable
	Stable at normal temperatures and pressure.
Conditions to Avoid:	Avoid contact with combustible materials. Chromium nitrate, 9-hydrate may ignite or explode on contact with combustible materials. Keep out of water supplies and sewers.
Incompatible Materials:	Chromium nitrate, 9-hydrate is incompatible with combustible materials, acids, metal salts, and reducing agents.
Fire/Explosion Information:	See Section 5, "Fire Fighting Measures".
Hazardous Decomposition:	Oxides of nitrogen. Chromium compounds.
Hazardous Polymerization:	<u> </u> Will Occur <u> X </u> Will Not Occur

11. TOXICOLOGICAL INFORMATION

Route of Entry:	<u> X </u> Inhalation <u> X </u> Skin <u> X </u> Ingestion
Toxicity Data:	Rat, Oral LD ₅₀ : 3250 mg/kg
Health Effects (Acute and Chronic):	See Section 3: "Hazards Identification" for potential health effects.

12. ECOLOGICAL INFORMATION

Ecotoxicity Data:	No information available.
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13. DISPOSAL CONSIDERATIONS

Waste Disposal:	Dispose in accordance with all applicable federal, state, and local regulations. Subject to disposal regulations, U.S. EPA 40 CFR 262, Hazardous Waste Numbers D001, D007. Dispose of in accordance with U.S. EPA 40 CFR 262 for concentrations at or above the regulatory level of 5.0 mg/L.
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14. TRANSPORTATION INFORMATION

U.S. DOT and IATA:	Chromium nitrate; UN2720; Hazard Class 5.1; Packing Group III.
Canadian Transportation or Dangerous Goods:	No classification assigned.

Land Transport**ADR and RID:**

Chromium nitrate; UN2720; Hazard Class 5.1, Classification Code 02; Packing Group III.

Maritime Transport:

Chromium nitrate; UN2720; Class/Division 5.1; Packing Group III.

15. REGULATORY INFORMATION

U.S. Regulations:

CERCLA Sections 102a/103 (40 CFR 302.4): Not regulated.

SARA Title III Section 302 (40 CFR 355.30): Not regulated.

SARA Title III Section 304 (40 CFR 355.40): Not regulated.

SARA Title III Section 313 (40 CFR 372.65): Chromium, chromic, and chromous compounds (Cr).

OSHA Process Safety (29 CFR 1910.119): Not regulated.

SARA Title III Sections 311/312 Hazardous Categories (40 CFR 370.21):

ACUTE: Yes.

CHRONIC: Yes.

FIRE: Yes.

REACTIVE: No.

SUDDEN RELEASE: No.

CANADIAN Regulations: WHMIS Classification: Not determined.**EUROPEAN Regulations****EC Classification:**O Oxidizing.
Xi Irritant.**EC Risk Phrases:**R8 Contact with combustible material may cause fire.
R 36/38 Irritating to eyes and skin.
R43 May cause sensitization by skin contact.**EC Safety Phrases:**S2 Keep out of reach of children.
S24 Avoid contact with skin.
S46 If swallowed, seek medical advice immediately (show label if possible).**National Inventory Status****U.S. Inventory (TSCA):**

Not listed on inventory.

TSCA 12 (b)**Export Notification:**

Not listed.

16. OTHER INFORMATION

Sources: MDL Information Systems, Inc., MSDS *Chromic Nitrate Nonahydrate*, 18 March 2004.

Disclaimer: Physical and chemical data contained in this MSDS are provided only for use as a guide in assessing the hazardous nature of the material. The MSDS was prepared carefully, using current references; however, NIST does not certify the data in the MSDS. The certified values for this material are given in the NIST Certificate of Analysis.